Amendment to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) Voltage shift control circuit intended to be placed in parallel with at least one voltage shift capacitor ~~coupled in series between~~ having a first terminal connected to an output of the phase comparator and a second terminal connected to an input of the voltage controlled oscillator of a phase locked loop and comprising:

- an input, intended to be coupled with the output of the phase comparator;

- an output, intended to be coupled with the input of the voltage controlled oscillator;

- controlled charging means, designed to charge the voltage shift capacitor according to a control signal;

- controlled pre-charging means, designed to accelerate the charging of the voltage shift capacitor by the controlled charging means; and

- controlled electrical polarization means, designed to ensure the electrical polarization of the input during the pre-charging of the voltage shift capacitor,

wherein the charging means includes a first operational amplifier and the polarization means includes a second operational amplifier.

2. (currently amended) Circuit according to Claim 1, wherein the controlled charging means comprise [[a]] the first operational amplifier connected as a voltage follower between the input and the output, a resistor placed in the feedback loop of the operational amplifier, and a controlled current source supplying a current of specified value through said resistor.

3. (previously presented) Circuit according to Claim 2, wherein the operational amplifier of the charging means comprise a push-pull output stage, and wherein the charging means further comprise a resistor of high value connected in series between the output of the operational amplifier and the output of the circuit.

4. (previously presented) Circuit according to Claim 3, wherein the controlled pre-charging means comprise a push-pull stage which, in the activation of the pre-charging means configuration, is arranged as a mirror with respect to the push-pull output stage of the operational amplifier of the charging means, in such a way as to short-circuit the high value resistor.

5. (original) Circuit according to Claim 4, wherein the push-pull stage of the pre-charging means is designed to deliver a current higher than the current delivered by the push-pull output stage of the operational amplifier of the charging means.

6. (currently amended) Circuit according to Claim 1, wherein the controlled polarization means comprise [[a]] the second operational amplifier connected as a voltage follower which, in the activation of the controlled polarization means configuration, is arranged to impose a common mode voltage on the input of the circuit.

7. (previously presented) Circuit according to Claim 1, further comprising means for deactivating the controlled pre-charging means before the controlled polarization means.

8. (previously presented) Circuit according to Claim 2, further comprising an additional controlled push-pull stage whose output is intended to be connected to the centre point of an RC network of a loop filter of the PLL and which, in the activation configuration, is connected as a mirror with respect to the push-pull stage of the controlled pre-charging means and with respect to the push-pull output stage of the operational amplifier of the charging means.

9. (original) Circuit according to Claim 8, wherein the additional controlled push-pull stage is integrated with the operational amplifier of the charging means.

10. (previously presented) Circuit according to Claim1, designed in CMOS technology.

11. (currently amended) Phase locked loop comprising a phase or frequency comparator, a loop filter, a voltage controlled oscillator, a voltage shift capacitor coupled in series between the phase comparator and the voltage controlled oscillator, and a voltage shift control circuit according to Claim 1 placed in parallel with the voltage shift capacitor and comprising:

- an input, intended to be coupled with the output of the phase comparator;

- an output, intended to be coupled with the input of the voltage controlled oscillator;

- controlled charging means, designed to charge the voltage shift capacitor according to a control signal and including a first operational amplifier;

- controlled pre-charging means, designed to accelerate the charging of the voltage shift capacitor by the controlled charging means; and

- controlled polarization means, designed to ensure the polarization of the input during the pre-charging of the voltage shift capacitor and including a second operational amplifier.

12. (currently amended) Radio-frequency transmitter, having a phase locked loop for generating a radio-frequency signal to be transmitted, said phase locked loop comprising a phase or frequency comparator, a loop filter, a voltage controlled oscillator, a voltage shift capacitor coupled in series between the phase comparator and the voltage controlled oscillator, and a voltage shift control circuit according to Claim 1 placed in parallel with the voltage shift capacitor and comprising:

- an input, intended to be coupled with the output of the phase comparator;

- an output, intended to be coupled with the input of the voltage controlled oscillator;

- controlled charging means, designed to charge the voltage shift capacitor according to a control signal and including a first operational amplifier;

- controlled pre-charging means, designed to accelerate the charging of the voltage shift capacitor by the controlled charging means; and

- controlled polarization means, designed to ensure the polarization of the input during the pre-charging of the voltage shift capacitor and including a second operational amplifier.

13. (currently amended) Mobile terminal of a radio-communications system with a radio-frequency transmitter having a phase locked loop for generating a radio-frequency signal to be transmitted, said phase locked loop comprising a phase or frequency comparator, a loop filter, a voltage controlled oscillator, a voltage shift capacitor coupled in series between the phase comparator and the voltage controlled oscillator, and a voltage shift control circuit according to claim 1 placed in parallel with the voltage shift capacitor and comprising:

- an input, intended to be coupled with the output of the phase comparator;

- an output, intended to be coupled with the input of the voltage controlled oscillator;

- controlled charging means, designed to charge the voltage shift capacitor according to a control signal and including a first operational amplifier;

- controlled pre-charging means, designed to accelerate the charging of the voltage shift capacitor by the controlled charging means; and

- controlled polarization means, designed to ensure the polarization of the input during the pre-charging of the voltage shift capacitor and including a second operational amplifier.

14. (currently amended) Base station of a radio-communications system with a radio-frequency transmitter having a phase locked loop for generating a radio-frequency signal to be transmitted, said phase locked loop comprising a phase or frequency comparator, a loop filter, a voltage controlled oscillator, a voltage shift capacitor coupled in series between the phase comparator and the voltage controlled oscillator, and a series voltage shift control circuit according to Claim 1 placed in parallel with the voltage shift capacitor and comprising:

- an input, intended to be coupled with the output of the phase comparator;

- an output, intended to be coupled with the input of the voltage controlled oscillator;

- controlled charging means, designed to charge the voltage shift capacitor according to a control signal and including a first operational amplifier;

- controlled pre-charging means, designed to accelerate the charging of the voltage shift capacitor by the controlled charging means; and

- controlled polarization means, designed to ensure the polarization of the input during the pre-charging of the voltage shift capacitor and including a second operational amplifier.